are propagated is small. When light is plane-polarized, or unpolarized, that is, when there is no retardation, or the phases of the component vibrations are simultaneous, then the opposite sums destroy each other; that is, the number of terms involved is greater, or the sphere of the influence of the force greater. Since both kinds of light can be propagated indifferently through ordinary media, it follows that the sphere of influence of the force, or number of molecules taken into account, does not here depend on the arrangement of the molecules of ether in the medium, but on the retardation of one of the vibrations behind the other, or the absence of it, originally impressed on the ray in the respective cases.

A paper was also read, entitled, "An Experimental Inquiry into the influence of Nitrogen on the Growth of Plants." By Robert Rigg, Esq. Communicated by the Rev. J. B. Reade, M.A., F.R.S., &c.

The author, after briefly alluding to a former paper laid before the Royal Society, describing the chemical changes which occur during the germination of seeds, and some of the decompositions of vegetable matter, proceeds, in the present paper, to trace a connexion between the phenomena exhibited during the growth of plants, and the direct agency of nitrogen. The experiments by which the author supports his views are arranged in separate tables, so drawn out as to indicate not only the quantities of carbon, oxygen, hydrogen, nitrogen, and residual matter, in about 120 different vegetable substances, but also the quantity of nitrogen in each compound, when compared with 1000 parts by weight of carbon in the same substance. The most important of these tables are those which exhibit the chemical constitution of the germs, cotyledons and rootlets of seeds; the elements of the roots and trunks of trees, and the characters of the various parts of plants, especially of the leaves, at different periods of their growth. From this extensive series, which is stated to form but a small portion of the experiments made by the author in this department of chemical research, it appears that nitrogen and residual matter are invariably the most abundant in those parts of plants which perform the most important offices in vegetable physiology; and hence the author is disposed to infer, that nitrogen (being the element which more than any other is permanent in its character) when coupled with residual matter, is the moving agent, acting under the living principle of the plant, and moulding into shape the other elements. The method of ultimate analysis adopted by the author, enables him, as he conceives, to detect very minute errors, and therefore to speak with certainty as to the accuracy and value of every experiment.

A paper was also read, entitled, "Researches in Rotatory Motion." By A. Bell, Esq. Communicated by the Rev. W. Whewell, M.A., F.R.S., &c.

This paper, which is altogether analytical, contains several new theorems in rotatory motion, respecting the effect of the centrifugal force arising from a rotation about any axis, in producing rotation